

The Principles of

HEAT and COLD
APPLICATION

A Handy Reference Guide to Eliminate the
Confusion of When to use Heat and Cold

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COLD

Temperature is between 0 to 12 deg. Celsius; cool is considered between 13 to 18 deg Celsius, not a topical room-temperature cream or lotion with cooling effect

What does cold do?

- When applied locally (to affected area) it reduces the temperature of the skin, then the muscles and joints
- Effect may last up to 45 minutes after cold source is removed
- Restricts blood flow to the area by narrowing the blood vessels (vasoconstriction)
- Decrease inflammation, swelling and muscle spasm
- Reduces bleeding
- Decreases pain
- Causes a temporary stimulating effect

With the application of cold, a person experiences the following effects over several minutes: firstly cold sensation; then tingling/itching; then aching/burning and then finally numbness (Hooper 1996)

When to use cold

- Acute and severe injuries – from the moment of the injuring up to 3 days after
- As long as pain, heat and swelling are still present
- Sprains, strains and bruises
- Repetitive use conditions/Overuse injuries and flare-ups i.e.) tendinitis
- Carpal tunnel syndrome
- Migraine headaches
- During exercise in hot environment - cool down with fans, ice packs and cold towels

Examples of cold applications

Cold applications should not be used for longer than 30 minutes at a time.

- *Cold Gel Pack/Ice pack:* wrap in a towel to prevent frost bite, place and hold over the area, ice packs contain crushed or chipped ice and are more efficient than commercial gel packs
- *Cold Arm/Foot Bath:* size of container depends on body part, great for awkward bony areas such as elbows, hands and ankles; immerse the body part for up to 1 minute; dry thoroughly afterwards. Wrapping body part in a towel can help insulate it while in the cold water.

- *Ice Cup*: take a paper cup filled with water and put it in the freezer; when frozen tear a way paper to expose ice as you massage/stroke it over affected area. Best suited for muscle injury and larger area.

Do Not Use Cold If:

- Raynaud's Disease or decreased skin sensitivity to temperature is present; the person feels chilled or circulatory insufficiency is present. Do not use over new wounds.

HEAT

Temperature is between 30 – 45 deg. C i.e.) electric moist-heat pad with on-off control, hot compresses; not a cream or lotion with a heating effect.

What does heat do?

- When applied to affected area it increases the temperature of the skin and muscle tissue
- Effect may persist for up to 1 hour after the source is removed
- Blood vessels open-up (dilate) and increases blood flow to tissues below heat source
- Circulation to the skin also increases
- Increased local cellular activity (metabolism) and sweat production
- Decreases pain
- Reduces stiffness, muscle tone and spasms
- Tissues become more flexible
- Sensations of relaxation and sedation can occur

When to use heat

- With chronic injuries - two weeks or more and have persisted for a length of time
- Fibromyalgia
- Osteoarthritis
- Tension headaches
- With colds, sinusitis or respiratory tract infections (through steam inhalations)
- For relaxation (baths)
- Before deep stretching
- After deep tissue work from a therapist
- Before exercise to warm the muscles

Examples of Hot Applications

- *Heating Pad (Thermophore)*: place a towel over the area to be treated, then put the heating pad on top, cover with plastic bag to direct heat into the body; apply for up to 10 minutes checking regularly that the skin is not becoming too hot. Never lie on the heating pad. Follow the same directions for hot compresses and water bottles.
- *Wax Baths (Paraffin Wax)*: within a commercially temperature controlled unit, dip hand or foot into paraffin wax 6 to 10 times, allowing wax to cool between each dip; then place plastic bag over the hand or foot to protect surfaces from the wax; wrap in a towel to retain the heat for up to 20 minutes; peel off wax
- *Full Body Baths*: keep temperature below 38 degrees to reduce a stimulating effect especially before bed; keep a cool cloth handy for the forehead and a glass of drinking water to keep you hydrated; herbal extracts, Epsom or Dead Sea Salts (1/2cup – 2 cups) can be added to the water; soak up to 20 minutes
- *Steam Inhalations*: sit in front of bowl filled with water that had been brought to boil or stand at stove over pot of water - herbal extracts may also be added; cover head, shoulders and pot with a large towel; close your eyes and inhale steam for up to 10 minutes; allow cool air in as needed if too hot; keep a cool cloth handy to wipe your face

Do Not Use Heat If:

- An acute injury is present – heat increases bleeding and swelling; Hypertension or other circulatory issues are present; decreases skin sensitivity to temperature change is present; with inflamed joints or skin burns; in the presence of infections, hives or rashes; person is hypersensitive to heat; caution with MS (Multiple Sclerosis); avoid over cancerous areas or areas containing malignant tumors.

CONTRAST - Heat then Cold

Alternating heat then cold causes a flushing effect – blood vessels dilate then constrict, causing an overall increase of circulation to the area, tissue healing and reduces swelling. It is also thought that the brain is momentarily distracted away from sending or receiving pain messages through the use of contrasting temperatures.

- Applied in a ratio of 3:1, 3 minutes of heat to 1 minute of cold and repeat 3 times for maximum effect

- The greater the difference in temperature of the application, the greater the effect on the local circulation
- Always end with cold application to prevent congestion

When to use Contrast

- Approximately 2 days to 2 weeks after an injury
- The presence of inflammation, swelling and heat should be diminishing

Examples of contrast applications

- *Arm/Foot Baths:* for contrast, fill one sink with warm/hot water and the other side with cool/cold water (use plastic bins for feet); place body part(s) in warm side first then the cool side; repeat 3 times
- *Compresses:* have both a hot water basin and a cold water basin available; dip one cloth in hot water, wring out and place on area; dip the other cloth in the cold water, wring out and replace the hot compress with the cold one.

The information provided is for educational purposes only.

Resources:

Clinical Massage Therapy: Understanding, Assessing and Treating Over 70 Conditions, Fiona Rattray RMT and Linda Ludwig RMT